

REMARKS

In response to the Final Office Action, Applicant respectfully requests that the allowability of the present application be reconsidered, in light of the comments below.

In the Response to Office Action filed on August 11, 2006, Claims 1 and 3-11 were canceled. However, the Final Office Action treats these claims as pending. Cancellation of Claims 1 and 3-11 is respectfully requested, leaving only Claims 12 and 18-25 pending.

Claimed Embodiments

As noted previously, Claim 12 recites a “computer configured to control the pump and the robot to effect pump-down and subsequent process pumping of one of the chambers during simultaneous venting, workpiece removal and workpiece reloading of the other of the chambers, such that said pump-down pumping of one of the chambers and said venting of the other of the chambers begin at substantially the same time.” This is referred to hereinafter as the “computer configured to” limitations of the last subparagraph of Claim 12.

The claims also contain other limitations of significant importance. While Applicant focuses on the “computer configured to” limitations, nothing herein is meant to imply that there are not additional bases for allowability over the prior art.

Section 102(f)/(g) Rejections

Claims 12 and 18-25 stand rejected under 35 U.S.C. § 102(g) and possibly 35 U.S.C. § 102(f) as being directed to the same invention as commonly assigned U.S. Patent Nos. 6,273,956 and 6,228,773 to Cox (“Cox ‘956” and “Cox ‘773”). The Final Office Action indicates that the “computer configured to” limitations discussed above do not render Claim 12 patentable over Cox ‘956 and Cox ‘773 (collectively referred to herein as the “Cox patents”). Applicant respectfully disagrees.

Section 102(f)

“Where it can be shown that an applicant ‘derived’ an invention from another, a rejection under 35 U.S.C. § 102(f) is proper.” M.P.E.P. § 2137; *Ex parte Kusko*, 215 USPQ 972, 974 (Bd.

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App. 1981) ("most, if not all, determinations under section 102(f) involve the question of whether one party derived an invention from another"). "Derivation requires **complete conception** by another and **communication** of that conception by any means to the party charged with derivation prior to any date on which it can be shown that the one charged with derivation possessed knowledge of the invention." M.P.E.P. § 2137 (emphasis added); *Kilbey v. Thiele*, 199 USPQ 290, 294 (Bd. Pat. Inter. 1978). "Communication of a complete conception must be sufficient to **enable** one of ordinary skill in the art to construct and successfully operate the invention." M.P.E.P. § 2137 (emphasis added); *Hedgewick v. Akers*, 497 F.2d 905, 908 (CCPA 1974). See also *Gambro Lundia AB v. Baxter healthcare Corp.*, 110 F.3d 1573, 1577 (Fed. Cir. 1997) (Issue in proving derivation is "whether the communication enabled one of ordinary skill in the art to make the patented invention."). "***The Examiner must presume the applicants are the proper inventors unless there is proof that another made the invention and that applicant derived the invention from the true inventor.***" M.P.E.P. § 706.02(g) (emphasis added).

In maintaining this rejection, the Final Office Action completely ignores the requirements of a rejection under section 102(f). The Final Office Action does not provide any proof that Cox completely conceived the claimed invention, including the "computer configured to" limitations of the last subparagraph of Claim 12, or that Cox communicated that conception to Applicant. Nor does the Final Office Action provide any convincing line of reasoning to support its position that a supposed communication of the disclosure of the Cox patents to Applicant would have been sufficient to enable a skilled artisan to construct and successfully operate a "computer configured to control the pump and the robot to effect pump-down and subsequent process pumping of one of the chambers during simultaneous venting, workpiece removal and workpiece reloading of the other of the chambers, such that said pump-down pumping of one of the chambers and said venting of the other of the chambers begin at substantially the same time." The Final Office Action even essentially **admits** that the mere disclosure to Applicant of the Cox patents alone could not have constituted a communication of a complete conception of the claimed invention. In particular, the Final Office Action admits that the Cox patents do not teach the "computer configured to" limitations of the last subparagraph of Claim 12. Final Office Action, page 9.

The Final Office Action merely points to Figure 15 of the Cox patents, stating that “[e]lements cited in each Figure 15 of the 102 references correspond directly to Applicant’s invention of Figure 2A of the instant application.” Final Office Action, page 11. However, this is not the standard for rejecting claims under section 102(f). It is necessary to focus on the claimed invention, not merely some similarities between the disclosures of the application and the prior art. “[T]he name of the game is the claim.” *In re Hiniker Co.* 150 F.3d 1362, 1369 (Fed. Cir. 1998). Even if elements shown in Figure 15 of the Cox patents “correspond directly” to Figure 2A of the present application (Applicant does not admit such), that is irrelevant to the question of whether Applicant derived the claimed invention from Cox.

Cox does not disclose or remotely suggest the “computer configured to” limitations of Claim 12. Cox does not disclose or suggest (1) one chamber undergoing the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; or (2) the pump-down pumping in one chamber beginning *at substantially the same time* as the venting in the other chamber.

Cox discloses “near zero overhead.” Applicant’s prior response explains in detail that Claim 12 does not encompass Cox’s notion of a “zero overhead” system, because Cox essentially defines “zero overhead” as requiring simultaneous pump-down pumping in one chamber and process pumping in the other chamber. The Final Office Action responds as follows:

“Examiner disagrees with Applicant’s characterization of Cox’s ‘near zero’ overhead conditions which implies the claimed ‘pump-down pumping and process pumping in one chamber during simultaneous venting, workpiece removal, and workpiece reloading in the other chamber. All processes, in conjunction, are effected to achieve Cox’s ‘near zero’ overhead conditions.”

Final Office Action, page 14. In response, Applicant provides the following step-by-step explanation:

1. The present application explains that pump-down pumping refers to the evacuation of a chamber prior to processing therein. *See* Specification, paragraphs [0004] and [0019] (“A pump down pump 20 is operated to evacuate the chamber 10, 12 prior to processing;” and “As a pump-down pump, the pump 64 is utilized to rapidly reduce the pressure within the process chamber from atmospheric pressure ... to a pressure at or near a desired process pressure...”).

2. The present application explains that process pumping refers to the maintenance of a chamber at a process pressure during workpiece processing. See Specification, paragraphs [0005] and [0019] ("A process pump 22 is operated to evacuate the chambers 10, 12 during processing;" and "As a process pump, the pump 64 is used to maintain the chamber at a desired process pressure for the duration of the substrate processing step.").
3. Cox defines "zero overhead" as conducting all "overhead" tasks in one chamber during processing in another chamber. Cox '773, col. 9, lines 42-48 ("The overhead is near zero if all chamber 30, 32 overhead processes and robot 15 overhead processes (that is, all pre- and post-active processing preparatory steps) are begun and completed during the time that each chamber 30, 32 alternately and synchronously begins and completes active processing of its wafer").
4. Cox defines "overhead" as including pump-down pumping. Cox '773, col. 2, lines 44-52 (stating that "overhead tasks" include "pumping or venting the process reactor chamber to the desired vacuum level").
5. Therefore, Cox's disclosure of "zero overhead" involves simultaneous pump-down pumping in one chamber and process pumping in the other chamber, which is not covered by Claim 12.

If the Patent Office persists in its view that Cox's disclosure of "zero overhead" implies the "computer configured to" limitations of Claim 12, Applicant kindly invites the Office to provide a more detailed explanation of why, as opposed to the conclusory statement in the Final Office Action (quoted above).

Section 102(g) Rejection

The Final Office Action provides no response to Applicant's argument as to the insufficiency of the section 102(g) rejection. M.P.E.P. § 2138 sets forth the requirements for basing an *ex parte* rejection of a patent claim on 35 U.S.C. § 102(g):

"35 U.S.C. 102(g) may form the basis for an *ex parte* rejection if: (1) the subject matter at issue has been actually reduced to practice by another before the applicant's invention; and (2) there has been no abandonment, suppression or

concealment... To qualify as prior art under 35 U.S.C. 102(g), however, there must be evidence that the subject matter was actually reduced to practice, in that conception alone is not sufficient... While the filing of an application for patent is a constructive reduction to practice, *the filing of an application does not in itself provide the evidence necessary to show an actual reduction to practice* of any of the subject matter disclosed in the application as is necessary to provide the basis for an *ex parte* rejection under 35 U.S.C. 102(g). Thus, absent evidence showing an actual reduction to practice (which is generally not available during *ex parte* examination), the disclosure of a United States patent application publication or patent falls under 35 U.S.C. 102(e) and not under 35 U.S.C. 102(g)."

M.P.E.P. § 2138 (emphasis added). Thus, even if the Cox patents disclosed and/or claimed the subject matter of Claims 12 and 18-25 (which they do not, as explained elsewhere herein), they alone do not qualify as evidence of an *actual reduction to practice*, as required for an *ex parte* section 102(g) rejection.

Section 103(a) Rejection

Claims 12 and 18-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cox '773 in view of U.S. Patent No. 6,802,933 to Khan *et al.* ("Khan"). The Final Office Action admits that Cox '773 does not teach the "computer configured to" limitations of Claim 12, but indicates that the skilled artisan would have been motivated to add Khan's computer controller method for automating Cox's process components, in view of Khan's teaching of process automation and the general desire to optimize operation. Applicant respectfully disagrees.

To establish a *prima facie* case of obviousness based on a combination of references, the references when combined must teach or suggest all the claim limitations. M.P.E.P. § 706.02(j); *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the

teachings of the references.” *Ex parte Clapp*, 227 U.S.P.Q. 973, 973 (Bd. Pat. App. & Inter. 1985); M.P.E.P. § 706.02(j).

Khan’s mere disclosure of a computer controller for a substrate processing system in no way suggests the “computer configured to” limitations of Claim 12, including (1) one chamber undergoing the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; and (2) the pump-down pumping in one chamber beginning *at substantially the same time* as the venting in the other chamber. The Final Office Action does not point to any prior art that suggests these limitations.

The reasoning of the Final Office Action is flawed. Even if the prior art taught computer-controlled process automation of substrate processing equipment and the general notion of optimizing operation, that alone would not have led the skilled artisan to adopt the operational sequence recited in Claim 12. Rather, the skilled artisan would have been led to the operational sequence taught by the Cox patents. The Cox patents specifically teach “zero overhead,” which involves simultaneous pump-down pumping in one chamber during process pumping in the other chamber (as meticulously explained above). Zero overhead is more time-efficient than the claimed operational sequence, because zero overhead means that workpiece processing is always occurring in one of the chambers. In contrast, the claimed invention *sacrifices temporal efficiency* to gain the combined advantages of (1) a reduction in the number of pumps, and (2) process pumping during the entirety of each chamber’s processing phase. See Specification, paragraphs [0022] – [0024]; Figures 3 and 4. Thus, the general motivations for process automation and operation optimization would not have led the skilled artisan to adopt the operational sequence of the claimed invention, in which (1) one chamber undergoes the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; and (2) the pump-down pumping in one chamber begins *at substantially the same time* as the venting in the other chamber.

Double Patenting

The Final Office Action rejects Claims 12 and 18-25 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-28 of Cox '956 and over Claims 1-28 of Cox '773. "[A]ny obviousness-type double patenting rejection should make clear: (A) The differences between the inventions defined by the conflicting claims – a claim in the patent compared to a claim in the application; and (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the patent." M.P.E.P. § 804(II)(B)(1). The Final Office Action acknowledges that the Cox patents do not teach or claim the "computer configured to" language of present Claim 12. The Final Office Action indicates that the reason why a person of ordinary skill would conclude that the invention of present Claim 12 is an obvious variation of the Cox claims is that it would have been obvious to program Cox's computer as taught in Claims 1, 7, 9, 10, and 13 of Cox '956, with motivation being to automate and optimize the process. Applicant respectfully disagrees.

As admitted by the Final Office Action, the Cox patents do not teach the "computer configured to" limitations of Claim 12 of the present application, which require that (1) one chamber undergoes the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; and (2) the pump-down pumping in one chamber begins at substantially the same time as the venting in the other chamber. As explained above, the Cox patents also do not suggest those limitations. Nor do Cox's claims make these limitations obvious. Careful consideration of Cox's claims bears this out. The only claims of the Cox patents that mention a computer are Claims 1, 7, 9, 10, and 13 of Cox '956, which are now addressed in turn:

Claim 1 of Cox '956 recites a dual chamber apparatus comprising a computer "for repeatedly synchronously alternately controlling the power source application, the robot movement and the chamber processing." This claim mentions processing workpieces "in a deep vacuum," but it says nothing about pump-down pumping or process pumping, let alone the relative timing of such. Claim 1 of Cox '956 does not even remotely suggest beginning pump-down pumping in one chamber at substantially the same time as the venting in the other chamber.

Dependent Claim 7 of Cox '956 adds the limitation that "the computer is programmed such that chamber overhead time substantially does not overlap with the chamber processing time." This claim merely requires that processing in a chamber begins only after all of the overhead tasks for that chamber (*e.g.*, venting, processed workpiece unload, unprocessed workpiece load, and pump-down) are completed. Claim 7 of Cox '956 does not remotely suggest beginning pump-down pumping in one chamber at substantially the same time as the venting in the other chamber.

Dependent Claims 9 and 10 of Cox '956 add the limitation that the computer is programmed to have a robot wait time of substantially/near zero between loading an unprocessed workpiece in one of the chambers and unloading a processed workpiece in the other of the chambers. Based on the specification of Cox '956, these claims merely require that the robot does not have any unproductive wait time between the unloading of a processed workpiece from one chamber and the loading of an unprocessed workpiece in another chamber. Note that the claim does not necessarily require a substantially zero lag time between the unloading of the processed workpiece and the loading of the unprocessed workpiece. Cox '956 makes it clear that the reference to "zero wait time" may actually encompass time associated with certain events, such as time that the robot traverses between the two chambers. *See* Cox '956, col. 13, line 34 to col. 14, line 16; Figures 17 and 18. Claims 9 and 10 of Cox '956 say nothing about pump-down pumping or process pumping, let alone the relative timing of such. Nor do they remotely suggest beginning pump-down pumping in one chamber at substantially the same time as the venting in the other chamber.

Dependent Claim 13 of Cox '956 adds the limitation that "the computer is programmed such that, alternately and synchronously, all of the odd numbered workpieces are processed in the second chamber and all of the even numbered workpieces are processed in the first chamber, but all workpieces are returned to their original slots in the single cassette." Again, this limitation says nothing about pump-down pumping or process pumping, let alone the relative timing of such. Nor does it remotely suggest beginning pump-down pumping in one chamber at substantially the same time as the venting in the other chamber.

With specific regard to Claims 1, 7, 9, 10, and 13 of Cox '956, even if a skilled artisan wanted to program the computer with an eye toward automating and optimizing the process of

the dual chamber apparatus, there is no apparent reason why the artisan would have decided to program the computer such that (1) one chamber undergoes the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; or (2) the pump-down pumping in one chamber begins at substantially the same time as the venting in the other chamber. In fact, the goal of process optimization would actually have led the skilled artisan toward a "zero overhead" process, which, as explained above, is not encompassed by the present claims.

Regarding the double patenting rejection, the Final Office Action states:

"With respect to Applicant's arguments based on the Examiner's double patenting rejections, it was previously noted, in prior actions, the fact that *all* apparatus parts and corresponding Figure numbers claimed in the present application are *identical* to the Cox patents. As a result, a reiteration of said parts would be redundant."

Final Office Action, page 14. Applicant disagrees. The claimed apparatus is not identical to the Cox patents. The Cox patents do not disclose a "computer configured to control the pump and the robot to effect pump-down and subsequent process pumping of one of the chambers during simultaneous venting, workpiece removal and workpiece reloading of the other of the chambers, such that said pump-down pumping of one of the chambers and said venting of the other of the chambers begin at substantially the same time." The Cox patents do indeed disclose a computer for various purposes. However, the mere disclosure of a computer and the general motivation to program the computer to achieve automation and optimization of a process does not make obvious a computer configured to control apparatus elements such that (1) one chamber undergoes the steps of pump-down and subsequent process pumping while another chamber simultaneously undergoes the steps of venting, workpiece removal, and workpiece reloading; or (2) the pump-down pumping in one chamber begins at substantially the same time as the venting in the other chamber.

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CONCLUSION

For the reasons presented above, Applicant respectfully submits that the rejections of Claims 12 and 18-25 are improper and requests that such rejections be withdrawn. Also, while the present Request for Reconsideration focuses primarily upon the "computer configured to" limitations of Claim 12, nothing herein should be interpreted as implying that there are not additional reasons for allowability of the pending claims. If there is any further hindrance to allowance of the pending claims, the Examiner is invited to contact the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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